

Parachute/Retrorocket System Tested

Dropped from a height of 500 feet from Sandia's aerial cable facility in Coyote Test Field, a 5000-pound sphere was stopped dead in the air a few feet off the ground and then gently lowered to impact in a successful test recently of RAPID.

RAPID is the Army's Retrorocket-Assisted Parachute Inflight Delivery system. Sandia is developing the system for the U.S. Army's Natick Research and Development Center in Natick, Mass.

The system will be used to soft-land cargos weighing from 5000 to 60,000 pounds from low altitudes — about 300 feet to reduce the chance of radar detection — from aircraft flying at speeds up to 300 mph. The cargos might include ammunition, rations, light tanks, armored personnel carriers, jeeps, trucks, bulldozers, road graders — any equipment needed quickly by a Rapid Deployment Force in a hostile environment.

Using the RAPID retrorockets to soft-land the cargo will simplify the amount of preparation before a drop — it will no longer be necessary to surround the cargo with honeycomb, foam, or airbags or to brace axles, engines, transmissions, etc., of vehicles being dropped to ground troops. It will also shorten the time required to get the equipment into use.

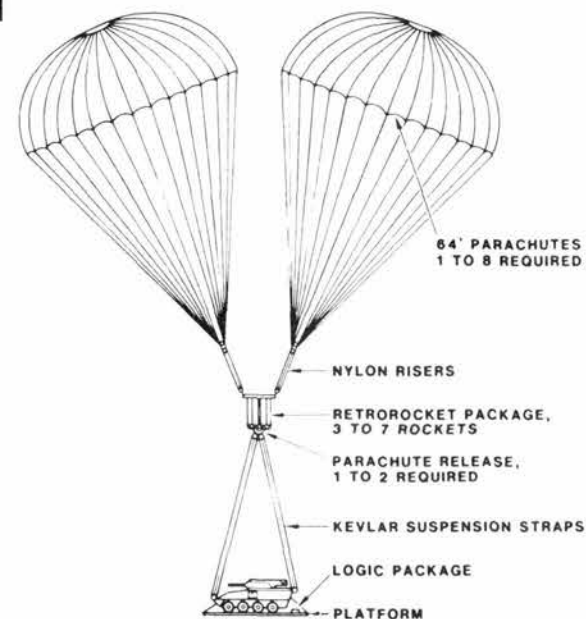
Key to the system is the firing — just before landing — of a cluster of retrorockets that stop the parachute-retarded descent of the cargo and ease it gently to the ground. The recent test at the cable site demon-

strated feasibility of the concept and accuracy of computer codes used to predict the event.


"It was the first successful test by Sandia of a parachute with the retrorocket module," says Jack Cyrus (6225), project leader. "A year of systems analysis effort and a series of main parachute extraction tests from C-130 aircraft at Edwards Air Force Base preceded this test. Next goal is a test of a complete system on the aerial cable next summer followed by drop tests of prototype hardware at Tonopah Test Range during August and September. Although our studies have shown that the system is feasible and can be built with existing advanced technology, we still have questions to answer and the task of successfully demonstrating system operation."

Computer modeling analyzed five aspects of the RAPID system: extraction of the load from the aircraft, inflation of the parachutes and trajectory of the payload, dynamics of the retrorocket module and payload during retrorocket firing, the stresses on the entire system, and the

(Continued on Page Five)



DRAWING OF THE RAPID (Retrorocket-Assisted Inflight Delivery System) shows configuration of system components before impact. Note that the retrorocket nozzles are aimed to fire around the cargo platform, suspended 35 feet below. Designed for soft-landing cargo weighing from 5000 to 60,000 pounds from low-flying aircraft, RAPID is under development at Sandia for the Army's Natick Research and Development Center.

 **LAB NEWS**

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Patent Applied For

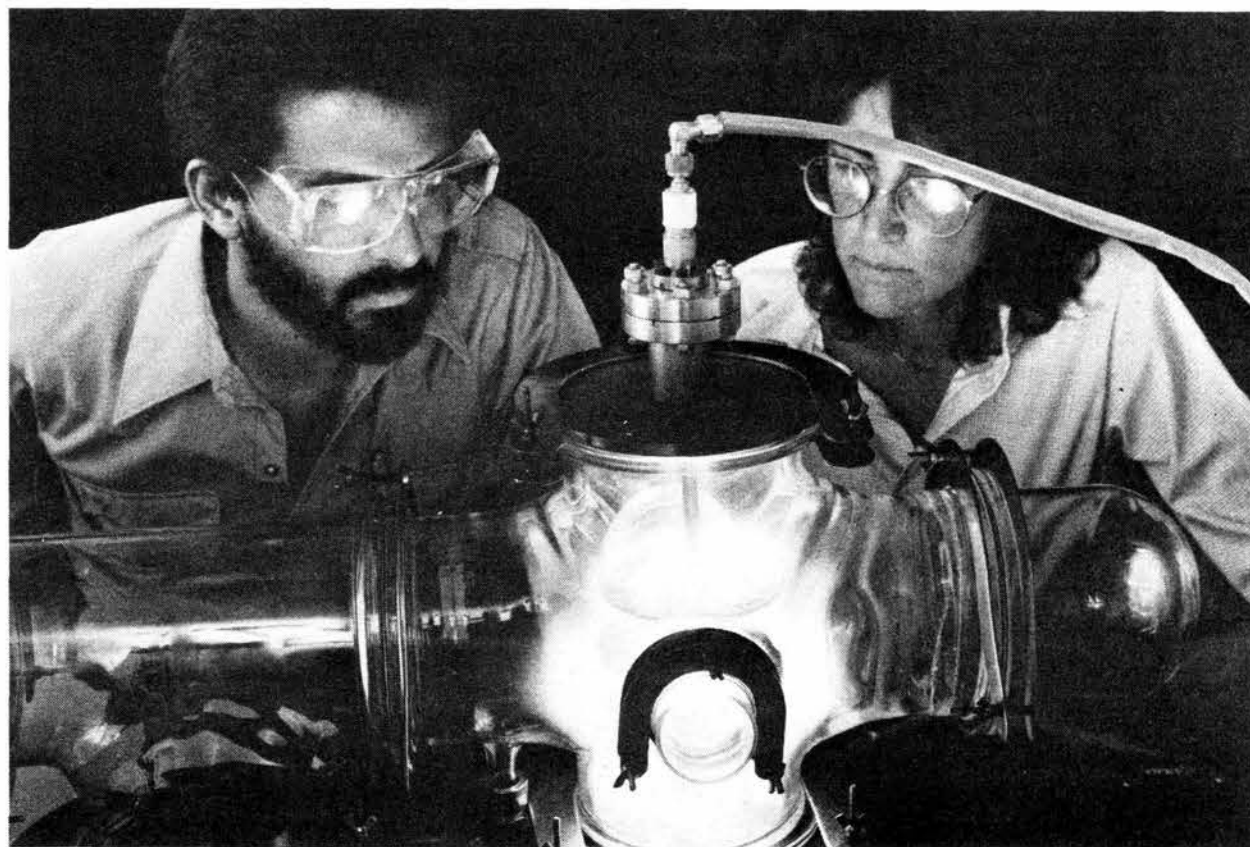
Simple New Plating Method Protects Metals

A simple, inexpensive method of plating with glass-like, amorphous metal alloys has been invented by Kay Hays, supervisor of Cleaning and Coating Technology Division 1831. The technique may ultimately result in significant savings of strategic metals such as chromium.

Amorphous metals are not composed of crystals; as a result, they are less susceptible to corrosion and fracture, which tend to begin at grain boundaries and defects found in ordinary crystalline metals. For this reason the amorphous metals are stronger and more resistant to corrosion and abrasion — characteristics that give them great potential value as protective coatings.

However, since there has been no easy, inexpensive way to produce amorphous metal coatings on large objects (a weapon, a car bumper, etc.), extra abrasion and corrosion resistance are commonly achieved by adding small amounts of so-called strategic metals (such as chromium, cobalt, and molybdenum) to crystalline metals. These strategic metals are expensive and frequently must be imported; for example, the US imports its chromium from the USSR and South Africa.

"If we can mass produce amorphous metal coatings, we may be able to reduce our dependence on strategic metals signifi-



USING A PLASMA to produce an amorphous metal coating are technician Ed Lopez and Kay Hays (both 1833), developer of the process.

cantly," says Kay. "For instance, we could substitute a low-carbon steel that has a corrosion-resistant coating for a material like stainless steel that contains as much as 18 percent chromium."

The new coating technique involves

using a radio frequency electric field to excite the gases containing the desired metals to form a plasma so that the metal alloy grows — as a glasslike, amorphous film — on the metal to be protected. This

(Continued on Page Four)

Antojitos

Hail to Thee, O Postal Service My accolade is not occasioned by speedier deliveries. Whatever the cost, I note that pennies for a letter's postage and its days in transit have a 1:1 correlation. (I think it was Robert Orben who pointed out that the cost for delivery stays the same; the increase is simply storage fees.)

No, I salute the USPS folks for somehow fathoming that we are the intended recipients of some misaddressed mail. Yes, a year has passed since we looked at the multifarious manipulations of our corporate address and marveled at the mind-readers among the many mail persons between addressor and addressee.

This year has brought us letters addressed to: Sanelia, Sudia, and Seneia National Labs; Sandia Nahond Labs; Cortland AFB (twice); and Sandria Labo in Alberque (that one from Baltimore). But the most challenging one originated in a hotel in Germany. I reproduce it exactly:

Sajndja
Ladoaepoair
Postofficebox
5800 Elbjqujiaqujc
87185 new Mexico
U.S.A.

●BH

* * *

It All Depends on Which Side of the Windshield You're On "Safety's got to do something! When I'm trying to get through the parking lot to my car after work, the drivers nearly run me down. Then, when I get into my car, the damned pedestrians are all over the place."

—paraphrased plaint of a retired department manager

Supervisory Appointment



MEL CALLABRESI to supervisor of Structural Mechanics Division 8242, effective Jan. 15.

After joining Sandia Livermore in 1969, Mel's first assignment was in the Experimental Mechanics Division where he worked on using experimental data in a finite element code to predict mechanical proportions of materials. He then moved to the Structural Mechanics Division, working on finite element code development and stress analysis.

His education includes a bachelor's degree in architectural engineering from Kansas State University, then a master's and PhD in civil engineering with an emphasis in structural mechanics from the University of Arizona.

Mel is active in the American Society of Civil Engineers and the Society of Experimental Stress Analysis. He and his wife Jane have a son and daughter, both in high school in Livermore. Mel's outside interests include coaching boys and girls soccer, girls softball, and boys baseball.

Welcome

Livermore

Grant Taylor (8234)

Arizona

Karen Shaeffer (8235)

Donald Shaeffer (8432)

California

Pamela Kanaley (8184)

Ohio

David Sayers (8245)

Pennsylvania

James Costa (8314)

Wisconsin

Richard Steeper (8473)

Livermore Take Note

Rick Stulen (8343) reports that his father, Frank Stulen, a retired aeronautical engineer for Parsons Corp., was one of nine recipients of the National Medal of Technology presented in person by President Reagan on Feb. 19. The award was established by Congress in 1980 to provide presidential recognition to companies or people that have "advanced US competitiveness in world markets, created new jobs, and made technological contributions to industries and people everywhere"; this was the first group of honorees.

Rick's father was recognized for his "development and successful demonstration of the numerically controlled machine tool for the production of the 3-dimensional shapes which have been essential for the production of commercial airliners and which are seminal for the growth of robotics

and other automatic manufacturing industries." Frank lives in Traverse City, Mich.

The only corporate entity to receive a Medal of Technology was AT&T's Bell Labs. Its award came for "decades-long contributions to modern communications systems, and helping to create the finest telecommunications system in the world."

* * *

Dick Jennings (8025) and retired SNLA staff member Bill Busby recently co-authored a magazine article for *Data Management*. Entitled "A Personal, Healthy Approach Toward Writing 'Readable' Programs," the article discusses methods by which information-processing professionals can create more understandable computer programs. It appeared in the November 1984 issue.

LAB NEWS

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LATEST RETIREES at Sandia Livermore: (from left) Bill Lavinsky (8184), Bob Milby (8162), John Cordial (8161), and Dorothy Schroeffer (8255).

Measuring Receiver Temperatures from Afar

The 1818 heliostats that concentrate solar radiation on the central receiver at Solar One near Barstow produce front surface temperatures that can loosely be described as "very hot." The question is "how hot?" and the challenge is to answer the question from the ground.

Just such an experiment — remotely measuring front surface temperatures of the receiver — has been completed by two Sandia researchers, Nina Bergan of Solar Central Receiver Components Division 8473 and Mary Clare Stoddard of Solar Central Receiver Systems Division 8471.

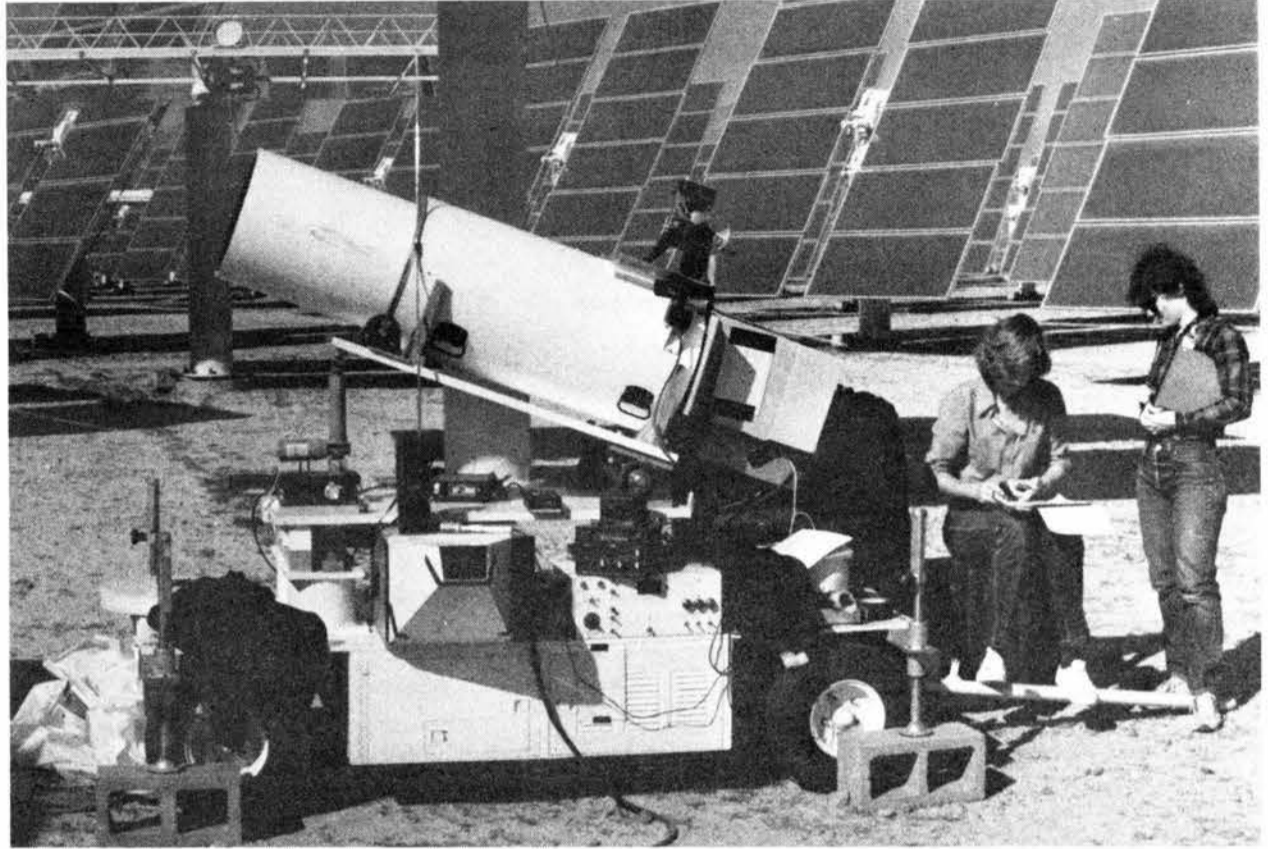
"The basic goal of the project was to learn whether infrared thermography is a feasible way to measure the temperatures," says Nina. "Using an infrared system would allow us to monitor temperatures in a remote, non-contact manner. That's helpful when working with a receiver atop a 235-foot tower."

Remote measurements are also necessary because any temperature-measuring device fixed to the receiver would be influenced by the thermal energy radiated from the device and the receiver as well as the solar energy reflected by the heliostats; therefore, device calibration would be difficult. In addition, such a device simply could not survive the intense heat levels for more than a few weeks. "So the task was to devise a means to measure receiver temperatures from afar," Nina continues.

"A secondary goal was to define front surface temperatures on the receiver," adds Mary Clare. Such data are useful in 1) improving the heliostat aiming strategy, 2) verifying thermal/hydraulic computer codes used in performance evaluation at the 10 MWe solar power plant, 3) evaluating methods to reduce thermal stresses, and 4) improving receiver life by detecting the uneven heating patterns in the 70 Incoloy tubes that make up each of the 24 panels in the cylindrical receiver.

At the Solar One site they utilized equipment that had been assembled by David Abrahams (8186), who assisted them in data acquisition. The equipment consisted of a large, 30-power Cassegrain telescope (its mirrors allowed a shorter, more portable telescope than a conventional one with lenses only) mounted on a four-wheeled vehicle, an infrared imaging detector system, a collimator specially designed to interface the detector and telescope, and two video monitors with a video cassette recorder to collect data. To calibrate their instruments, two blackbody radiators were installed on the receiver itself.

They situated their test apparatus in the middle of the heliostat field some 660 feet from the receiver tower. "The location presented some unique problems," notes Nina. "We had more than 600 feet of environment, or atmosphere, between the target and our equipment. The distance allowed thermal energy to enter the detector from sources other than the receiver panels. So we had two choices: either take enough data under different environmental conditions to account for that intrusion, or



NEW METHOD to determine the temperatures on the solar central receiver at Solar One was developed by Nina Bergan (8473; left) and Mary Clare Stoddard (8471). With this telescope and infrared thermography, they measured the temperature range on the receiver panels (atop the 235-foot tower) from the midst of the heliostat field (660 feet away from the tower).



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recalibrate our instruments as the environment changed. We chose the latter — recalibrate every 10 minutes during our testing. We called it our 'instantaneous calibration scheme.'"

"The large distance represents a compromise between being as close as possible to the tower so we could achieve adequate spatial resolution and being far enough away so the angle of detection between us and the receiver was not too steep," Mary Clare adds. "The 660-foot distance out among the heliostats gave us a maximum angle of detection of about 25 degrees off horizontal."

The panels of tubes emit thermal radiation (which the system was designed to measure), but they also reflect solar flux. The goal was to have the detector insensitive to that reflected flux, that is, to make the detector "solar blind" in order to increase the accuracy of the measurements.

And it worked. The telescope/video equipment provided an image mode that allowed the researchers to see a 12x18-inch section of receiver panel. The shades of gray on the image could be correlated to the temperatures on the receiver surface. And it was hot: temperatures ranged from 200°C to 540°C.

Behind the receiver panel front surfaces, the operating conditions of the solar central receiver provide recycled inlet water into the tubes at 175°C and outlet steam at about 410°C. The non-uniform way in which the tubes heat up has caused concern over buckling and even potential rupture. The

two researchers were able to obtain steady state temperature distributions over an entire receiver panel during normal operations, as well as transient measurements on a smaller region of one panel during a specific event, such as receiver shutdown.

Analysis of their data proved that accurate temperature measurements can be made on an operating receiver, even at the 660-foot distance. Their results showed that distinct boiling regimes in the panels were identifiable and that certain lateral temperature differences exist across the panels, accounting for the uneven stress points on the rows of vertical tubing.

Both Nina and Mary Clare feel their experiment met the initial objectives. The next step is to characterize the telescope optics in order to quantify the bias arising from less-than-perfect (spatial) resolution of the target. After this analysis is complete, a second series of tests will be conducted at Solar One.

Nina and Mary Clare have presented their results at meetings with DOE, the Solar Energy Research Institute, and the Society of Photo Optical Instrumentation Engineers.

Congratulations

Debbie and Jim Van De Vreugde (8354), a daughter, Kristin Marie, Feb. 8.

Melissa and Sheridan Johnston (8351), a son, Alexander Ryan, Feb. 28.

Susan and Dick Anderson (8352), a daughter, Emily Rebecca, March 2.

Plating Method

growth, or deposition, occurs at room temperature.

"To form the films with plasma deposition, you simply adjust the flow rate of the feed gas to get the required proportions," Kay notes. "It's much easier to put down coatings based on highly complex formulations when all you have to do to change the composition of the coating is to turn some knobs." Traditional coating methods do not have this flexibility.

The type of gas used to carry the metals to the plating surface is important to the process; in fact, the key to Kay's patent is the use of hydrogen, which carries off excess oxygen as water and thus avoids unwanted oxidation of the coatings.

"I'm working primarily on developing coatings containing nickel, chromium, and phosphorus," Kay continues. "But I think the same general technique should permit deposition of many different amorphous metal coatings on a wide variety of materials, from steel strips to plastic mouldings."

The plasma deposition process seems superior — simpler, less expensive — to conventional techniques used to produce amorphous metal coatings, such as sputtering, electro-less chemical deposition, and ion implantation.

A patent application on the process has been made by the DOE in Kay's name.

Sympathy

To Emma Quintana (7475) on the death of her daughter in Albuquerque, Jan. 19.

To Anne Marie Carroll (6451/6453) on the death of her grandmother in Albuquerque, Feb. 21.

To Bill Vansalous (7482) on the death of his brother in Albuquerque, Feb. 9.

To Louis Erne (3162) on the recent deaths of his brother and nephew, both in California.

To Mat (1522) and Mary (1623) Sagartz on the death of his father in Chicago, March 7.

To John Harrington (7842) on the death of his father in Albuquerque, March 7.

Welcome

Albuquerque

Wesley Bayless (1132)
Jack Cargill (3544)
Celeste Case (1823)
Leonard Hilgartner (7474)
Barbara Rutter (5268)

Michigan

Joseph Perry (1815)

Missouri

Kevin Keisner (5238)

New Jersey

Frank Peter (2334)

New Mexico

Paul Salazar (3426)

Pennsylvania

John Anderson (7862)

Texas

Mary Green (2821)
Randy Harrison (2812)



UNION OFFICIALS gathered this week to inspect Sandia's new "Minuteman" flag awarded by the U.S. Treasury Department for the Lab's participation in the Savings Bond Program. Eighty-nine percent of employees were buying Bonds as the campaign started; the goal is to reach 95 percent. Endorsing the drive are George Paul (7813), vice president, Metal Trades Council; Bob Stewart (3536), president, International Guards Union of America, Local 27; John Martinez (3417), new president, Local 251, Office and Professional Employees International Union; and Jerry Garcia (153), vice president, Local 251, OPEIU. Metal Trades Council president Conrado Otero (7482) couldn't make the photo session but sent word that he heartily supports the Bond campaign. The Minuteman flag will fly on the flagpole on top of Bldg. 800 throughout the drive.

Bond Campaign Update

'Going for Number One'



Talking with Dave McCloskey (1520), Sandia Savings Bond committee chairman, earlier this week, LAB NEWS found a very enthusiastic chairman and good news about the current campaign.

"We are seeing a tremendous response — at Albuquerque, Livermore, Tonopah, and Pantex — toward our goal of making Sandia number one on the national corporate honor roll," Dave says. "Last year we were eighth out of 104 organizations listed and seventh in our category. But we're going for Number One — and early returns showing large numbers of new bond registrations and a big swing to bond-a-month purchases suggest that we have a good chance of making that goal."

The campaign should wind up next Friday, March 22. Employees are asked to complete their payroll deduction cards and turn them in immediately.

"We are finding that most Sandians are surprised by the high interest rates that Bonds are paying," Dave says. "And they like the variable market-based rate feature." (The current rate for bonds held five years is 10.94 percent.)

"Many employees have told us," Dave continues, "that when they total their Savings Bonds, they're amazed — Bonds add up. Over the years, a nearly painless deduction accumulates into an impressive amount."

"Our current Savings Bond campaign is stressing this point," Dave says. "Most people have difficulty in saving money for the things they want or need — a new car, a house down-payment, or their children's education. Payroll deduction for Savings Bonds is a simple, sure, and safe way to save."

Dave is confident that the campaign will "make Sandia number one" on the honor roll. "But at the 95 percent participation level, every employee is important — a single non-participant cancels out 20 of his/her fellow Sandians. At the 97 percent participation level, it takes more than 30 sign-ups to overcome the effect of one non-participant — three non-participants per 97 Bond buyers means a 1 to 30-plus ratio. Because of retirements among Bond buyers, we entered the campaign with 89 percent participation in the Savings Bond program. I urge all non-participants, even those who have already said 'No,' to join up — we have lots of spare cards!"

Savings Bond Interest Rate Is 10.94%

Average yield for Bonds held since the beginning of the market-based interest program is 10 percent. Average rates for all eligible Bonds are shown in the table below. Average yields change each May and November. The minimum guaranteed yield on Bonds held five years or longer is 7.5 percent.

Bonds Purchased Through	Semiannual Market-Based Rates					Avg. Rate
	Annual Percentage Rates for Semiannual Periods					
	1st	2nd	3rd	4th	5th	
4/30/83	11.09%	8.64%	9.38%	9.95%	10.94%	10.00%
5/1/83-10/31/83	8.64%	9.38%	9.95%	10.94%		9.73%
11/1/83-4/30/84	9.38%	9.95%	10.94%			10.09%
5/1/84-10/31/84	9.95%	10.94%				10.45%
11/1/84-4/30/85	10.94%					10.94%

These rates apply only to Bonds held five years or longer. They also apply to Bonds purchased before November 1, 1982, when they are held to their first interest-accrual date, November 1, 1987.



RETROROCKETS OF THE RAPID system stopped a 5000-pound sphere in mid-air and gently lowered it to impact during a drop test recently from the Sol Se Mete aerial cable facility in Coyote Test Field.

Continued from Page One

Retrorocket System Tested

sequencing and timing of all functions by the sensing and logic module.

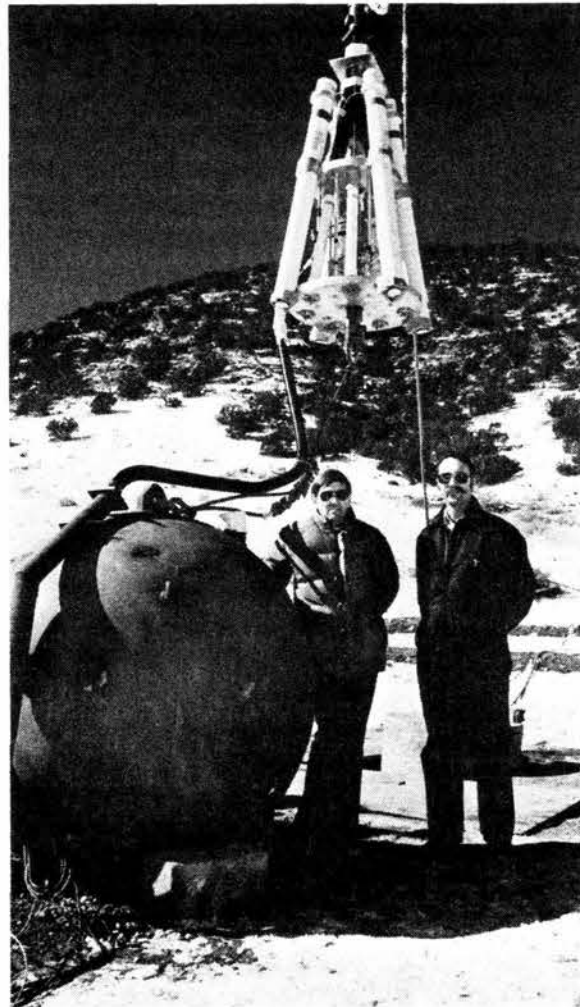
The analysis showed that a soft landing can be accomplished if all functions occur in proper sequence and at the proper time. Since the drop altitude is low and the loads are heavy, there is very little time in the operational sequence — about eight seconds from extraction to touchdown.

A frequency-modulated, continuous wave, millimetre wave radar (being developed by Honeywell for Sandia) calculates the descent velocity and the proper turn-on height for the rockets. Systems weight and velocity data are used by the logic package to determine the burn time of the rockets. The number of rockets used depends on overall system weight; they are loaded before takeoff.

The main boost rockets fire anywhere from 10 to 30 feet above the ground. Then the micro-computer reads data from an on-board accelerometer to compute descent velocity as the rockets burn. When the payload is just a few feet above the ground and moving near zero velocity, the main rockets are shut down. The sustain rockets fire and the payload slowly and gently settles to the ground. Touchdown is equivalent to a one-foot free fall.

"The system has to be flexible to meet the payload weight requirements," Jack says. "Gently landing cargos that weigh from 5000 to 60,000 pounds with retrorockets is a formidable task. The planned tests at Tonopah will drop a payload weighing 11,400 pounds from a C-130. More tests will be needed to demonstrate the system's ability to handle a wide range of payload weights."

The reimbursable project is centered in Advanced Systems Development Division I 1621 under Dick Braasch. Program



BEFORE DROP TEST from the 500-foot aerial cable facility in Coyote Test field, Ray Klein (1621) and Tom Steuber (7535) checked rigging of the retrorocket module and the 5000-pound sphere used to simulate payload weight.

manager is Calvin Lee of the U.S. Army Natick R&D Center. Others on the development team include Ira Holt, Parachute Systems Division 1632; Larry Rollstin, Aeroballistic Projects Division 1635; Stewart Kohler, Guidance and Control Division 2334; and Ray Klein, Wind Energy Research Division 6225.

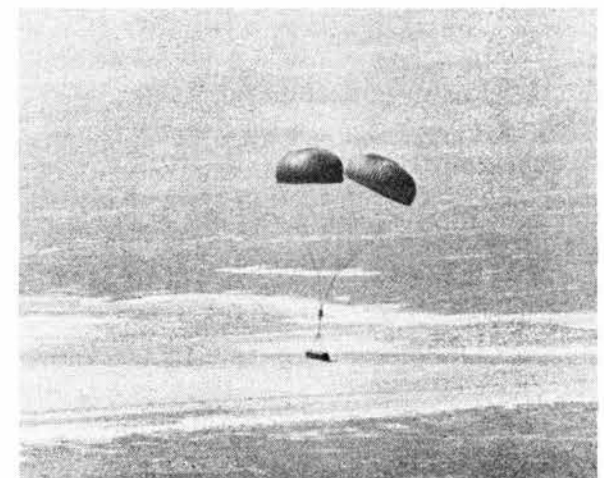
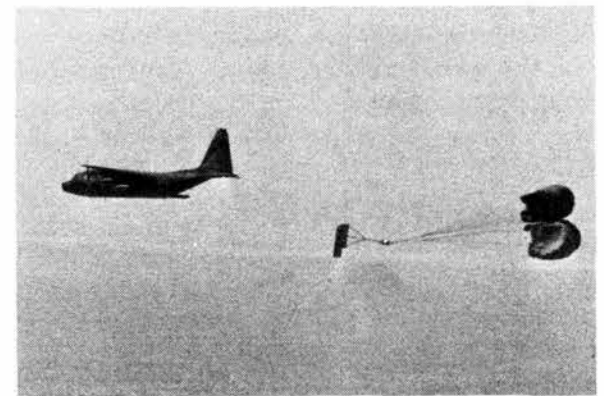
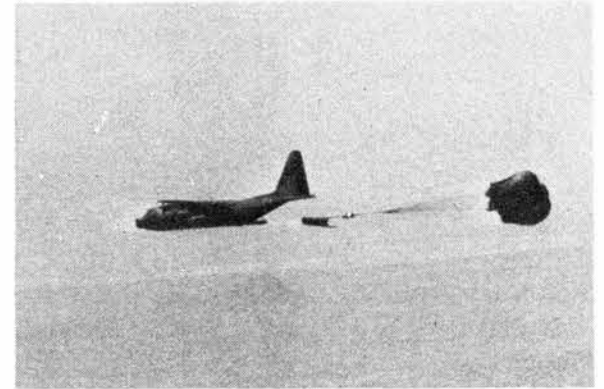
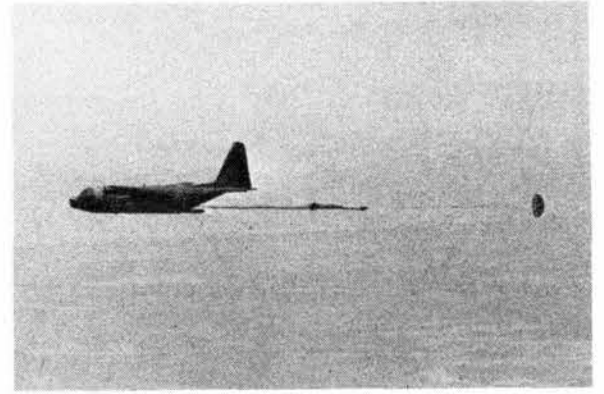
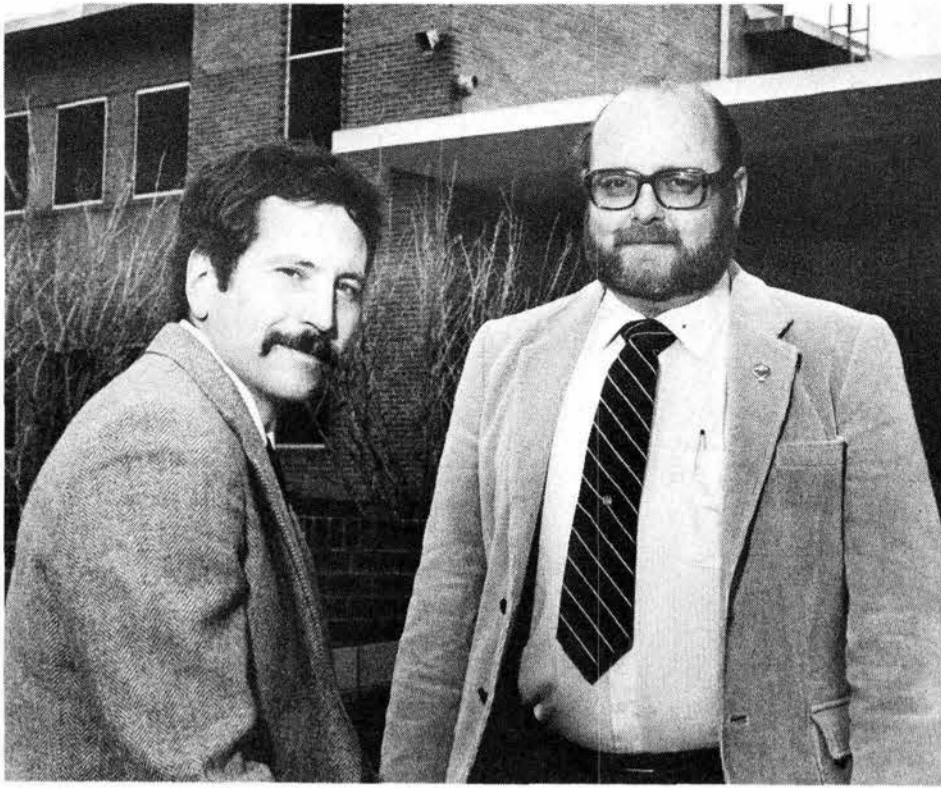


PHOTO SEQUENCE from an extraction test of the RAPID system shows (top photo) a drogue parachute pulling two G-12D 64-foot-diameter parachutes from the rear cargo doors of a C-130. As the parachutes inflate, they pull the payload from the aircraft, then rotate 90 degrees to a vertical position. Designed for low-altitude drops at speeds around 300 mph, the RAPID system from parachute to payload is much shorter than conventional cargo drop systems. The extraction and parachute deployment test verified analytical codes developed by Sandia. The entire RAPID system performance behavior can be simulated by the codes.



JIM WILDER (2533) and LARRY CHOATE (1233)



RALPH JOHNSON (7240), ARCHIE GIBSON (2632-3), center; and GARY FERGUSON (2543).

Supervisory Appointments

JIM WILDER to supervisor of Ceramic Components Development Division II 2533, effective March 1.

Jim joined the Labs in October 1977 as a staff member in a ceramics development division. A year ago, he transferred to the division he now supervises.

Jim graduated from the Catholic University of America (Washington, D.C.) with a BS in applied physics, MS in engineering, and PhD in materials science. He is a member of the American Ceramic Society, IEEE and SPIE. He and his wife Diane have two children and live in NE Albuquerque.

LARRY CHOATE to supervisor of Simulation Operations Division 1233, effective Feb. 16.

Larry joined the Labs in October 1975 in the radiation physics division where he carried out advanced reactor safety research. Since 1977 he has been with the weapons development directorate where he was radiation effects simulation project leader for the Trident I and II, Minuteman III, Peacekeeper, and numerous other weapon programs.

He received his BA and MS in physics from Stephen F. Austin State University (Texas), and his PhD in physics from Texas A&M. Larry enjoys personal computing, fishing, and reading military history. He and his wife Barbara have two sons. They live in the NE heights.

RALPH JOHNSON to manager of Measurement Standards Department 7240, effective Feb. 16.

Ralph joined the Labs in 1965 as an MTS in solid state sciences. For several years his general research included radiation effects in semiconductors, materials memory and switching phenomena in amorphous semiconductors, and ionic conduction in solid electrolyte materials. In 1970 he was promoted to supervisor of a division con-

cerned with electrical transport in materials. Since 1977, he has supervised Electronic Property Materials Division.

Ralph received his BS, MS, and PhD in physics from Kansas State University. He is a member of the American Physical Society. He and his wife Ruth coordinate the marriage enrichment program for the Archdiocese of Santa Fe. The Johnsons have four children. They live in the NE heights.

ARCHIE GIBSON to supervisor of Computer Operations Section G 2632-3, effective Feb. 1


Joining the Labs in 1966, Archie worked in the mailroom for two years before transferring to the computer center as a data processing clerk. Since then, he has held various jobs at the center — computer operator, senior operator, and operations control analyst.

Archie enjoys any outdoor sport, especially hunting and fishing. He lives in Rio Rancho.

GARY FERGUSON to supervisor of Special Projects Division 2543, effective March 1.

Following his graduation from the University of Texas with a BS in ME, Gary joined Sandia's systems engineering group. A member of the One-Year-On-Campus program, Gary completed his MS in ME at Stanford. He was on special assignment for eight months in Washington, D.C., with the Defense Special Projects Group, and then worked with the exploratory systems organization until 1978 when he transferred to components engineering.

Gary is a member of ASME and is a registered professional engineer in New Mexico. He enjoys skiing and motorcycling. He and his wife Coleen have two children and live in SE Albuquerque.



Here are some current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

ALBUQUERQUE COMMUNITY FOUNDATION through its expansion arts program is helping minority groups implement new programs. Three of these new organizations need administrative assistance (for example, setting up accounting systems, filing for IRS tax-exempt status, etc.): Ayocuan (musical group), Eva Encinias (flamenco dance company), and New Child Productions (theatre group in Afro-American Studies, UNM).

SCOUTS and CUB SCOUTS are looking for male and female unit commissioners to serve as liaison with unit leaders, coordinators, and committees and to give administrative guidance to units.

CONTACT, a telephone counseling, crisis, and referral center, needs volunteers. Next 50-hour training program starts Monday, March 18, in the evenings.

Congratulations

Bill (1522) and Lori Mills-Curran, a daughter, Mary Elizabeth, March 6.



ALBUQUERQUE'S DIRTY AIR is not something new. This composite photograph was taken by retiree Bill Laskar in March 1969. Shot from the

west mesa, the picture clearly shows the "brown cloud" hovering over the city.

Clear the Air 1985

How Now, Brown Cloud?

A two-day workshop, "Care About Air," will be held March 22 and 23 to inform the public about Albuquerque's air pollution problems — particularly the "brown cloud" phenomenon, the health and economic effects of air pollution, and responsible citizen participation and action concerning air pollution issues.

The first session — a public forum presented by the League of Women Voters — will be held at the UNM Law School on March 22 from 7-10 p.m. The keynote address, "A Historic Perspective of Air Quality in Albuquerque," will be made by Larry

Gordon, director of the Albuquerque Environmental Health and Energy Department. The panel discussion, "How Now, Brown Cloud," will include State Representative Don Silva, Roger McClellan, director of the Lovelace Inhalation Toxicology Research Institute; and Bernie Zak (6324) who headed the "Brown Cloud Study" conducted by Sandia.

Day two of the workshop will be held at the Teacher Learning Center (Louisiana and Comanche). The afternoon session, chaired by the League of Women Voters,

will be a public seminar dealing with citizen action, attitudinal change, values clarification, and citizen participation in air pollution issues.

Clear the Air 1985, a year-long calendar of events sponsored by the Albuquerque Environmental Health and Energy Department, is designed to increase public awareness of air pollution problems in the city. In addition to the League of Women Voters, participating organizations include Ridepool, the NM Lung Association, AAA, the Sierra Club, and the Clean Air Coalition.

feed: feedback

Q: The COMET electronic mail system is burdened with an Gutenberg-age system for locating other COMET users: outdated — and apparently never-to-be-updated — alpha and organization lists. I suggest coding each name in the organizational portion of the phone book with a symbol for "COMET subscriber." It means more work for the phone book folks — but so did the decision to indicate DMTS, contract, and on-loan people with symbols. And it would certainly make a theoretically useful system practically useful as well.

A: To identify and code COMET subscribers in the telephone directory would require additional manpower from both the computer and technical publications organizations. Additional manpower is not available in either organization at this time.

In order to find out whether or not a person is a COMET subscriber, one may attempt to address a message to that person. If the person is known to COMET by the name you have used, the message will be accepted. If not, the name will be identified as invalid. If the name is similar to other subscriber names, all similar names will be offered.

The first line of any descriptive information the users have entered about themselves will also be displayed as an identification aid. This will help users to identify one another (for those who choose to enter descriptions for themselves), but does not really fulfill the need for a "subscriber list." There is no way with the current system to reasonably achieve this goal. This and other limitations of COMET assure that it will eventually be replaced with a more powerful system.

H.M. Willis - 3100



ECP DOLLARS AT WORK — Sandia's ECP reserve fund contributed the money to buy the gym mat and the giant pipe builders for the Albuquerque Special Preschool, which offers educational and therapeutic services to handicapped children from birth to five years of age. The Preschool receives partial funding from the United Way.

Q. Sandia's curbs are unpainted or yellow, green, white, magenta, Sandia blue, or chipped so that no color is predominant. Does any color or combination have a meaning as far as parking is concerned?

A. Some curbs were repainted or stripped of paint last year. Other areas were left abandoned to wear off. This worn area causes the confusion. A work request has been submitted to complete the curb



painting project in and around Tech Area I. Our goal is to minimize the yellow zone. The color codes are as follows:

- | | |
|-------------|---|
| Red | No parking anytime - Fire Lane |
| Yellow | No parking - For safety and traffic control |
| Sandia Blue | Medical or handicap parking only |
| White | Reserved for special use as noted |
| Green | Short time parking for deliveries |

When the painting is complete there should be no further confusion.

R.W. Hunnicutt - 3600

Take Note

The Albuquerque Chapter of the IEEE Computer Society will sponsor a microcomputer operating system panel discussion on March 18 at 7 p.m. in Rm. 201 of the Electrical and Computer Engineering Building on the UNM campus. Topic of the discussion is "OS9 — a UNIX-like operating system for 6809 and 68000 microcomputers." Panel members will include Terry Jensen, J&M Systems LTD; Joel Robertson, Robertson Electronics; and Mike Michnovicz, BDM Corp. The meeting is open to the public. For more information, contact Michael Hannah (2614), 6-3459.

* * *

Nominations for the 1984 Energy Person of the Year Award from Americans for Rational Energy Alternatives (AREA) are being solicited. Nominations should be brief, the nominee should be from New Mexico, and membership in AREA is not necessary. The nominee should have demonstrated support for development and conservation of energy, including nuclear power, coal production, geothermal research, oil and natural gas production, and/or wind and solar development and research. Nomination deadline is 4 p.m., March 22. For more information, contact the AREA business office — P.O. Box 11802, Albuquerque, 87192, or call 292-7575.

* * *

Health Fair New Mexico, underway now until March 30, offers anyone 18 years or older free basic health tests, including checks for height, weight, vision, blood pressure, and anemia.

For a \$10 fee, a detailed blood chemistry analysis that checks for diabetes, kidney and liver disease, iron deficiency, gout, and thyroid problems may also be obtained. For an additional \$5, participants may have the Cardiac Risk Profile test to determine their risk category for heart disease. (It is necessary to fast for a minimum of 12 hours before taking these tests.)

Some sites will also offer free screenings to check for various cancers, glaucoma, hearing impairments, and foot diseases. All tests will be done by qualified medical workers at each Health Fair site, and follow-up counseling and referral services will be provided during and after the event.

City sites include: Winrock Mall, March 15; Cibola High School, March 16; Truman Middle School, March 16; Casa Armijo Center, March 19; Kaseman Presbyterian Hospital, March 20, John Marshall Community Center, March 21; Emerson Elementary School, March 23; Garfield Middle School, March 23; Albuquerque High School, March 23; Albuquerque Convention Center, March 26-27; Los Padillas Community Center, March 27; West Mesa Community Center, March 29; Montgomery Mall, March 30; and Nativity of the Blessed Virgin Mary, March 30.

For additional information, call Patsy Nelson, Project Director, 277-0097.

* * *

Friends of the Albuquerque Public Library will hold a used book sale at the Library on March 20-23. Preview Night is Wednesday, March 20, from 6 to 8:30 p.m.; admission is \$2 and the used book shop will be open. Thursday hours are 10 a.m. to 8:30 p.m., Friday and Saturday hours are 10



ADORNING THE LOBBY of Bldg. 802 is the work of artist Lynn Peters (3155). "I don't merely try to replicate images," she notes. "I try instead to provide a viewpoint through a wide variety of media. And that's what makes the world of art so exciting to me — I set my own limits, then constantly change them." The 802 display includes her current work in watercolor, pencil, acrylic, airbrush, ink, charcoal (as in the work to her right), and metalwork. Lynn came to Sandia in 1981 with a graduate degree in art and with wide experience in the field. The exhibit will hang through April 12.

a.m. to 5; on Saturday customers can fill a grocery sack with books for \$1. Hardbound and paperback books, an assortment of magazines, and possibly, records and posters will be for sale. Proceeds help support the children's programs in the Albuquerque Public Library system, The Center for the Book, and the Framed Print Collection.

* * *

Children and young adults with disabilities can enjoy camping in one- and two-week sessions this summer as the Easter Seal Society of NM begins its second year of residential camping programs at Kamp Kiwanis near Gallup. The camp, built and maintained by the Southwest District Kiwanis Foundation, offers a multi-purpose lodge, two dormitory buildings, paved wheelchair walks, and 160 acres of tall ponderosa pines.

Camp activities are similar to programs at any summer camp. Emphasis will be on outdoor-oriented activities — camping under the stars, cookouts over open fires, nature hikes, campcraft education, ecology, recreation, arts and crafts, swimming, and trips to nearby points of interest. The fee for each camper — people with any type of disability aged 7 through adult — is \$160 per week. Easter Seals underwrites the remaining cost. Camperships, full and partial, are also available through supporters of the Easter Seal Society and local Kiwanis clubs.

Anyone interested in registering for a camp session or working at the site should contact Karen Wright at Easter Seals, 888-3811.

* * *

A reunion for old timers who were at Los Alamos before Jan. 1, 1949, will be held in June. Several hundred civilian and ex-military people are expected to attend. Tours and social activities are on the agenda. For more information, write to "Reunion," P.O. Box 700, Los Alamos, NM, 87544.

* * *

An enchilada dinner to benefit the El Encanto Day Care Center, will be held March

23, 5-8 p.m. at the following locations: El Buen Samaritano United Methodist Church, 7th and Granite NW; St. Stevens United Methodist Church, 4601 Juan Tabo NE; and Monte Vista Christian Church, 3501 Campus Blvd. NE Tickets are \$4 for adults and \$2.50 for children under 12. El Encanto, a non-profit day care center serving low income families in the Albuquerque area, has been in existence more than 15 years and relies almost entirely upon donations and special fund raising projects to meet expenses. For more information, call, Carolyn Swain, 344-4536.

* * *

The American Institute of Aeronautics and Astronautics (AIAA) will meet March 29 at the Regent Hotel. Social hour begins at 6 p.m. with dinner (\$12/person) at 7. Leo Villareal, from NASA's Johnson Space Center, will discuss the space shuttle orbiter — the inside story on logistics and refurbishment between flights — and will also give an overview of the 25 years of NASA's space programs. Reservations are required; call Terry Jordan (1635), 4-1899, or Walt Rutledge (1635), 4-0119.

* * *

Dolores Gravning (4050) has appeared in many stage productions in Albuquerque, but she describes her role of the mother superior in "Agnes of God" as the "role of a lifetime." The play, a three-woman show — the mother superior, a young nun, and a psychiatrist — is showing at the Vortex (2004½ Central SE) on Fridays, Saturdays, and Sundays through March 31. Showtime on Friday and Saturday is 8 p.m., and 6 p.m. on Sunday.

* * *

Albert Einstein is the subject of a special exhibit at DOE's National Atomic Museum through May 24. The exhibit commemorates his birth 106 years ago with a display of quotations, facsimile pages, photos, factual reports, and interpretative text to tell the story of his special distinctions. Museum hours are 9 to 5 every day.

She Did It by Herself and It Was Hard

Sandian a Finalist in International Imitation Hemingway Competition

Sandy Borgrink (3163) seldom exposes her literary talents, but she entered the Eighth International Imitation Hemingway Competition and achieved the rank of finalist. Had she won, she'd have been poured a free drink at Harry's Bar and American Grill, sponsor of the contest. Since the bar is in Florence, Italy, a free trip there and back is part of the package.

Always eager to recognize literary talents that go beyond Sandia-ese, LAB NEWS herewith publishes sanitized excerpts from Sandy's entry:

"These pants are welded steel," announced the stranger striding stiffly into Harry's Bar & American Grill.

Harry made the best daiquiri in Florence. He squeezed the limes behind his knees. On the floor. He did it by himself and it was hard. Not so hard as the Caesar salad but it was hard.

"What will you have?" asked Harry.

"Two bottles of Fundador, six bottles of Chateau d'Yquem chilled to the point that the moisture forms so heavy and wet on the bottle that you can't read the label just like in Ronda, a couple of your lesser reds and a small coke," said the stranger.

Harry looked at him. He did not look like a bullfighter. But it wasn't like it used to be. They didn't. He would have known if it was Belmonte. It wasn't. Joselito was dead and gored before his legs went and it was hard.

"To go," asked Harry "or do you want to drink it here?" He knew the answer but asked anyway. He was a kind man in spite of the Great War and all it had done to him and there would not be a time to forget. It showed and he knew it.



HEMINGWAY PARODIST
Sandy Borgrink (3163) recreates the ambience essential to the creation of really good really bad Hemingway. Her entry didn't win, but it put her among the finalists in the Eighth International Imitation Hemingway Competition. Winner gets a free trip to, and a free drink at, Harry's Bar & American Grill in Florence, Italy.

(Setting courtesy Jolly Knight)

"Here," said the stranger reaching for the first bottle of Chateau d'Yquem with the moisture running down the sides like the bulls in the streets of Pamplona obliterating the label and making it hard. Just like in Ronda.

It was dark in Harry's Bar & American Grill. The stranger leaned over the zinc

counter and looked Harry in the eye. "Do you fish?" asked the stranger. Harry shook his head. There had been a time before the Great War that he had threaded more black grasshoppers by the thorax than any other man alive but not anymore. It was too hard.

"Well, we can't all and some of us don't," said the stranger reaching stiffly. . .

Retiring



Bob Jefferson (6340)



Candy Garcia (3423)



Art Arthur (7125)



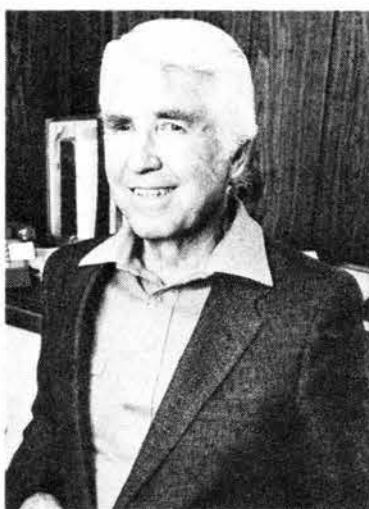
Art Jones (3154)



George Banos (3510)



Al Marrs (5231)



Sam Johnson (3665)



Mary Beth Brown (3741)



Don Loehle (3424)



Gene Fifer (2852)

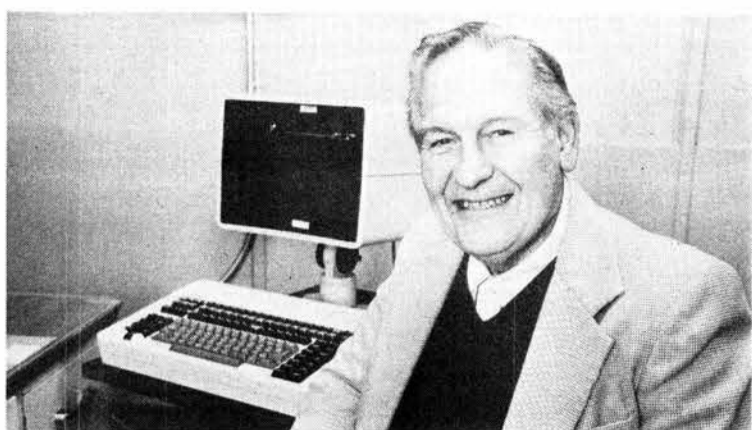
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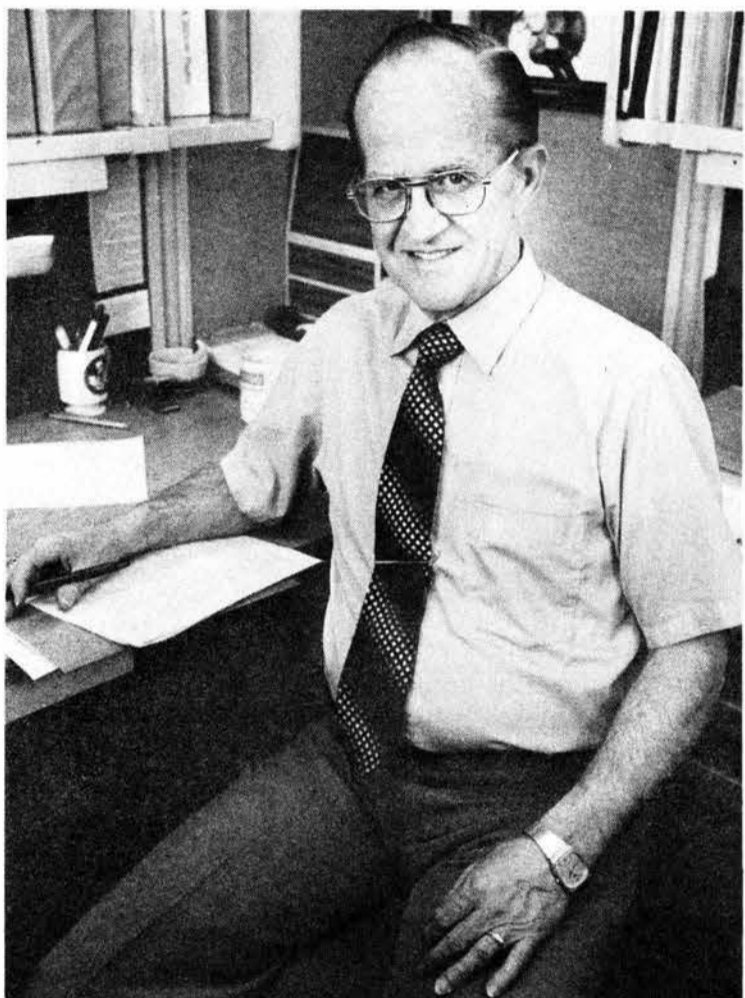
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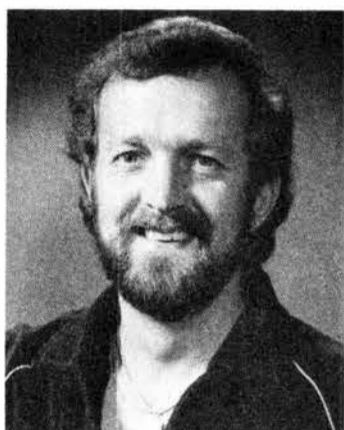
Ed Vulgan (5249) 35



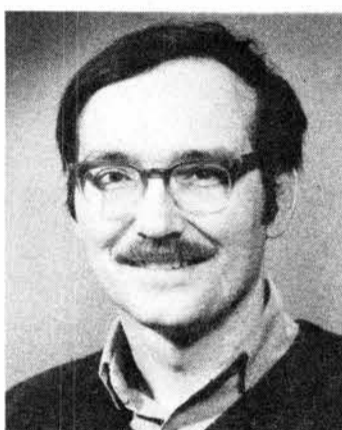
Howard Stuart (7211) 30



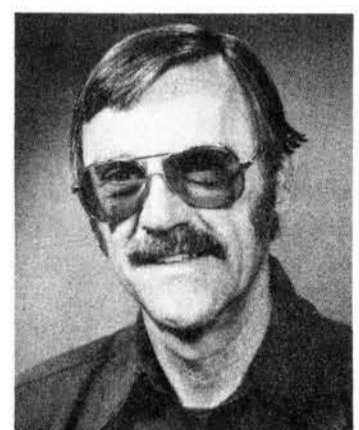
Charlie Ray (3721) 25



Tom Bauman (6241) 15



David Palmer (2112) 10



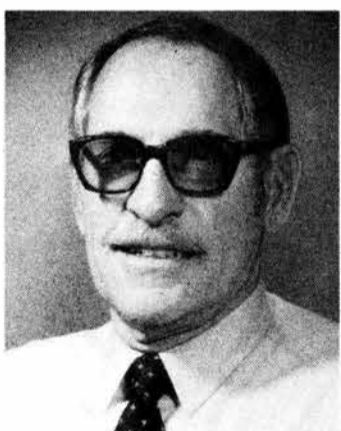
Fred Wymer (321) 25



Bernard Stiefeld (7554) 30



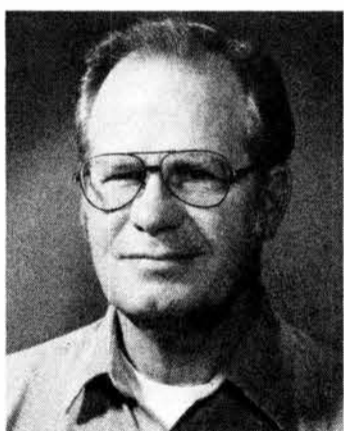
Roger Tate (1634) 25



Dave Poli (2825) 30



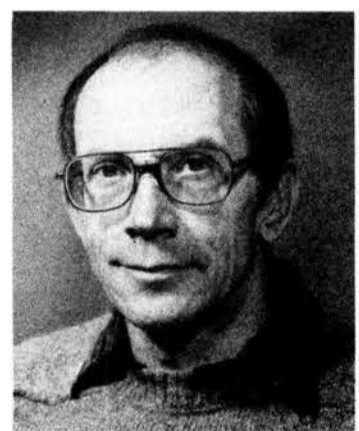
Dick Cook (8272) 30



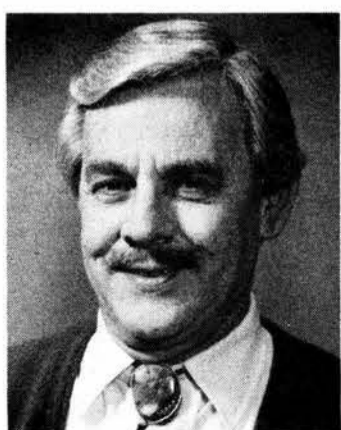
Alton Meador (2331) 30



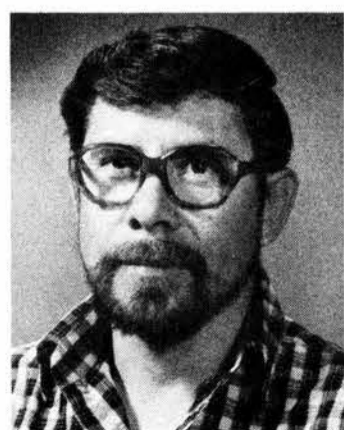
Rand Rozelle (2857) 25



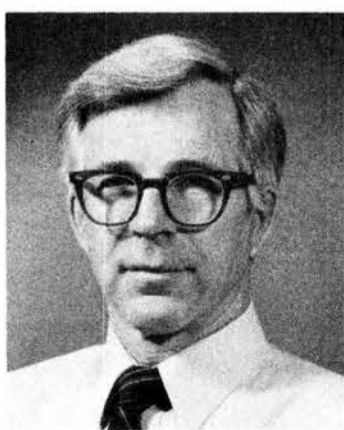
David Kendall (7265) 25



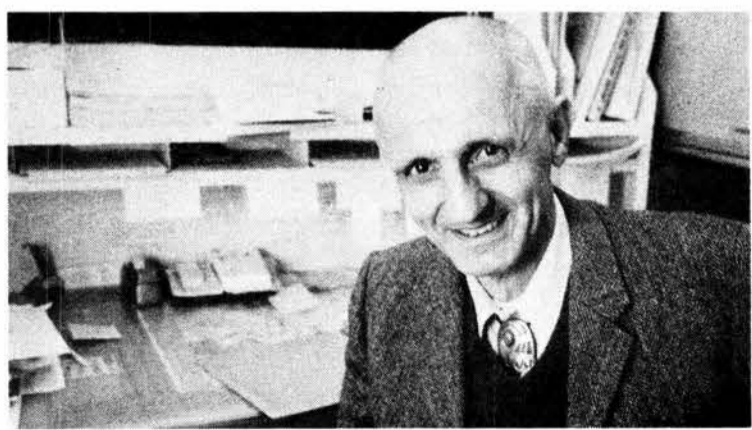
Don Grab (2545) 30



Guillermo Candelaria (2854) 15



Kenneth Timmerman (5111) 25



Al Hachigian (7213) 25

Coronado Club Activities

Wear Green Tomorrow; Original Irishman Returns

TONIGHT, a variety group called Together holds the bandstand while the dining room special is your choice of New York steak or scallops, two-for-one at \$11.95. Reservations are required, but you can call the Club office *right now*, 265-6791, and find out about cancellations.

TOMORROW, the Club celebrates St. Patrick's Day. St. Pat has long been revered as the patron saint of engineers because he drove the snakes out of Ireland — a fine piece of engineering worthy of a celebration. Ask any Irish engineer. The original Irishman, a legend named Tommy Kelly (ret.), returns to the Club tomorrow to sing songs of the aulde sod. Irish eyes will be smiling. There'll be green beer and free munchies starting at noon in the main lounge. Bob Banks (3531) on piano accompanies Tommy who sings from 3 to 5 p.m.

ON FRIDAY, March 22, the popular Isleta Poor Boys return to the Club to play their own exciting brand of country and western music. The dining room features a super entree called "Conquistador Steak" — a juicy New York cut marinated in Chef Henry's special Rio Grande style Spanish sauce. Yes, it has a little green chile and, yes, it's a tasty concoction worthy of Oñate and Coronado. You get your choice of vegetables, a baked potato, rice, or refried beans. Or, you can order halibut, a fine fish filet dinner. The best part is, it's two for one — two orders for \$10.95.

CORONADO SKI CLUB meets Tuesday, March 19, at 7 p.m. in the ballroom for the important business of electing new board members to serve next season. The standard Ski club prices on beer and wine will be in effect and, as a last fling, the best door prizes of the season will be up for grabs — including a pair of skis. "Adventure Skiing in Europe" is the scheduled film.

A TRAVEL PROGRAM, presented by Carefree Travel Agency, is set for Monday, March 25, at 7:30 p.m. in the ballroom. There'll be a film and discussion on travel in South Africa. Admission is free.

A new Club-sponsored trip by charter bus to Las Vegas with a tour of Hoover dam included is announced by Marv Plugge (5171), chairman of the travel committee. The trip includes lodging for three nights in Las Vegas, continental breakfast and lunch on the first day, and refreshments on the bus. Cost is \$110, double occupancy.

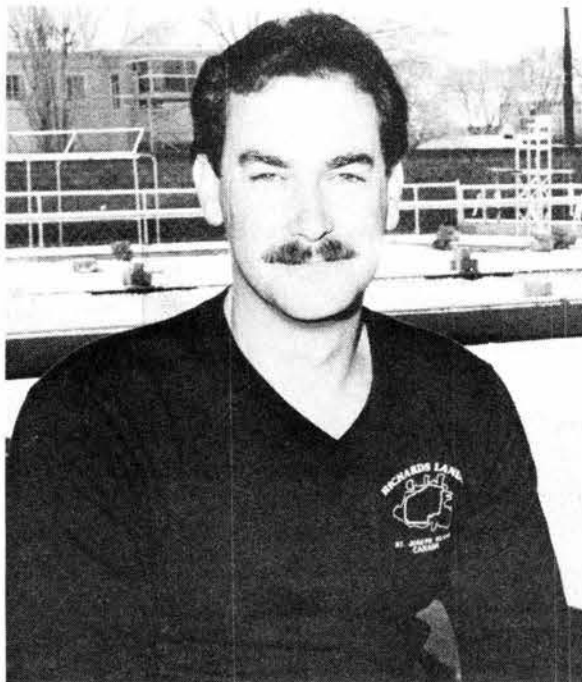
Marv also reports that a few seats are left on the bus tour to Chaco Canyon on Saturday, April 20. Cost is \$26. At the pre-trip meeting scheduled April 11 in Rm. B5 at the Club, a staff member from UNM's Chaco Center will discuss history of the National Monument. Guides will accompany the tour group while at the ruins.

Sign up right away for either trip at the Club office.

IT'S SHAPING UP, the talent show Saturday, March 31. Some dynamite acts have signed up to compete for prizes, Chef Henry has designed a buffet menu with

family appeal (that means steamboat round of beef plus a variety of desserts for youngsters) at family prices, and everyone's invited — members, non-members, Sandians, DOEans, military, and contractors on Base. Special prices (very reasonable) will be in effect. Dinner starts at 6 p.m.; entertainment at 6:45. Make reservations, bring the kids, and c'mon out.

SANDIA THUNDERBIRDS, retiree interest group, meets Monday, March 18, at 10:30 a.m. for a card party. Bring your own deck, plan to have lunch at the Club, then continue the game all afternoon.



STAN FORD is Sandia's new recreation manager. His office is in the basement of the Coronado Club, phone 4-8486.

Stan Ford Heads Sandia Recreation

Stan Ford is the new manager of the Sandia Employee Recreation Program. He replaces Tom Lenz who resigned recently to accept a position in Austin, Texas.

Stan was recreation director of the El Paso Parks and Recreation Department for two years before moving to Albuquerque to pursue a PhD in sports medicine at UNM. He holds a BS in biology from UTEP and has completed course work at NMSU for an MS in interdisciplinary physics.

Active in sports throughout his life, Stan was a member of basketball, wrestling, and swim teams in college.

He has coached the KAFB Aquatic Club; supervised the El Paso YWCA health, physical education, and recreation program; and helped coach the NMSU swim team.

"I see recreation as primarily fun," Stan says. "If the sport is competitive, that's fine and we play to win. If we lose, we can still laugh.

"I see the current programs established by Tom Lenz continuing. As the opportunities arise, we will offer new activities and perhaps new classes stressing fitness and wellness. We can work out individual programs for exercise and offer some insights on health."



ENTERTAINING TOMORROW from 3 to 5 p.m. are Bob Banks (3531) on piano and tenor Tommy Kelly (ret.) singing Irish songs in honor of St. Patrick's Day. The Club opens at noon, offers green beer and a free spread of munchies and goodies.



MAKE SANDIA NUMBER ONE!



BUY U.S. SAVINGS BONDS

